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EXAMINER	
VU, MICHAEL T	

ART UNIT	PAPER NUMBER
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/566,677	ANNUNZIATO ET AL.	
	Examiner	Art Unit	
	MICHAEL T. VU	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09/14/2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *22,23 and 25-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *22,23 and 25-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 22-23, 25-42 have been considered but are moot in view of the new ground(s) of rejection.

2. Claim 24 is cancelled, and claims 22, 23, 28, 32, 41 and 42 have been amended.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 22-23, 25-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Somaza et al (US 6,336,035) in view of Ephremides et al (US 5,987,328).**

Regarding claim 22, Somaza teaches a method of planning cellular communication networks (Figure #3 shows the tools wireless network planning), implemented using a computer (Figure #1 shows a computer system #140, see Col. 4 lines 57-67), comprising the steps of:

defining a joint cost function to be optimized (adding new equipment to optimal service coverage, see Col. 1 lines 52-65), the joint cost function being indicative of a quality of service of location-based services (Figure #3c shows planning network cost and the quality of service, see Col. 7 lines 19-43) and at least one additional class of services rendered by the network (implement/adding equipment and other resources, or panning a new cell site, see Col. 7, lines 3-43), the at least one additional class of services being selected from a group of voice services and data services (Figs. 3a-3c show the planning or upgrading a wireless network, see Col. 5 line 63 to Col. 6 line 27); and

Somaza does not explicitly show optimizing, by the computer, the joint cost function. However, Ephremides discloses optimizing, by the computer, the joint cost function (Figure #1 shows the calculating cost function to optimize coverage, or adding the new base stations/transmitters/receivers, see Col. 7 line 56 to Col.8 line 21).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Somaza, with Ephremides' teaching, in order to provide flexible and realistic design for wireless networks in which allows easy changes to the network components and characteristics for minimizing cost (as suggested by Ephremides, see Col. 1 lines 6-8).

Regarding claim 23, Somaza and Ephremides teach the method of claim 22, Somaza further teach wherein said joint cost function is based on measuring a dilution

of precision of said network (see Figure 6 shows planned coverage area, or measure signal strength within the cell, Col. 9 lines 7-9).

Regarding claim 25, Somaza and Ephremides teach the method of claim 22, Somaza further teach comprising the steps of: providing a system for measuring at least one actual network parameter (Figs. 3a-3c show planning and upgrading a wireless network); and comparing the measurements provided by said measurement system with the corresponding parameters as planned (see comparison charts and cost models for equipment selected, Col. 6 lines 5-13).

Regarding claim 26, Somaza and Ephremides teach the method of claim 22, Somaza further teach comprising the step of locating at least one critical point in the network where inadequate quality of service is being provided (Fig. 3c shows a quality of service or a cost comparison chart, Col. 7, lines 19-43).

Regarding claim 27, Somaza and Ephremides teach the method of claim 26, Somaza further teach comprising the step of generating information items indicative of counter measures to be carried out in said network in order to dispense with at least one critical point (see cost analysis or a cost comparison chart, Col. 7, lines 19-43, or problem coverage areas, Col. 2, lines 32-43, and Col. 9, lines 39-45).

Regarding claim 28, Somaza and Ephremides teach the method of claim 22, Somaza fails to show wherein said joint cost function is optimized by using as input data the location of at least one radiating system associated with one base station in said cellular communication network.

However, Ephremides discloses wherein said joint cost function is optimized by using as input data the location of at least one radiating system associated with one base station in said cellular communication network (Figure #1 shows the calculating cost function to optimize coverage, or adding the new base stations/transmitters/receivers, see Col. 7, line 56 to Col. 8, line 21). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Somaza, with Ephremides' teaching, in order to provide flexible and realistic design for wireless networks in which allows easy changes to the network components and characteristics for minimizing cost (as suggested by Ephremides, see Col. 1 lines 6-8).

Regarding claim 29, Somaza and Ephremides teach the method of claim 28, Somaza further teach for planning a cellular communication network over a given area (plan network capacity, Col. 2, lines 32-43), comprising the steps of:

Somaza does not explicitly teach subdividing said area into sub-areas, one of said sub-areas corresponding to the destination sub-area of a new base station in said network, the remaining sub-areas being expected to be affected by the introduction of said new base station; planning said destination sub-area of the new base station also

by evaluating the effects on said remaining sub-areas; and evaluating the quality of service resulting from said planning while ascertaining whether such a level of quality of service is satisfactory.

However, Ephremides discloses subdividing said area into sub-areas, one of said sub-areas corresponding to the destination sub-area of a new base station in said network (subdivided coverage areas, Col. 4, lines 29-50), the remaining sub-areas being expected to be affected by the introduction of said new base station (adding a new base station, Col. 7 lines 56 to Col.8 line 21); planning said destination sub-area of the new base station also by evaluating the effects on said remaining sub-areas (the cost function calculation, and evaluate the cost function, Col. 5, lines 39-48); and evaluating the quality of service resulting from said planning while ascertaining whether such a level of quality of service is satisfactory (Figure #1 shows the calculating cost function to optimize coverage, or adding the new base stations/transmitters/receivers, see Col. 7 lines 56 to Col.8 line 21). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Somaza, with Ephremides' teaching, in order to provide flexible and realistic design for wireless networks in which allows easy changes to the network components and characteristics for minimizing cost (as suggested by Ephremides, see Col. 1 lines 6-8).

Regarding claim 30, the combination of Somaza and Ephremides teach the method of claim 29, Somaza further teach wherein said planning involves computing a point-by-point value of the dilution of precision for all the pixels in the area subject to

planning (see Figure 6 shows planned coverage area or measure signal strength/dilution within the cell, Col. 9 lines 7-9).

Regarding claim 31, Somaza and Ephremides teach the method of claim 30, Somaza does not explicitly teach wherein said planning involves computing a cost function pertaining to location services only, said cost function being a linear combination of said dilution of precision and the average and minimum values thereof.

However, Ephremides discloses wherein said planning involves computing a cost function pertaining to location services only, said cost function being a linear combination of said dilution of precision and the average and minimum values thereof (the cost function calculation, and evaluate the cost function, Col. 5, lines 39-48), and (Figure #1 shows the calculating cost function to optimize coverage, or adding the new base stations/transmitters/receivers, see Col. 7 lines 56 to Col.8 line 21).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Somaza, with Ephremides' teaching, in order to provide flexible and realistic design for wireless networks in which allows easy changes to the network components and characteristics for minimizing cost (as suggested by Ephremides, see Col. 1 lines 6-8).

Regarding claim 32, Somaza and Ephremides teach the method of claim 29, Somaza does not explicitly teach comprising the step of optimizing a join cost function for voice, data and location services.

However, Ephremides discloses the step of optimizing a join cost function for voice, data and location services (Figure #1 shows the calculating cost function to optimize coverage, or adding the new base stations/transmitters/receivers, see Col. 7 lines 56 to Col.8 line 21).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Somaza, with Ephremides' teaching, in order to provide flexible and realistic design for wireless networks in which allows easy changes to the network components and characteristics for minimizing cost.

Regarding claim 33, Somaza and Ephremides teach the method of claim 29, Somaza does not explicitly teach wherein, if said quality of service is found not to be satisfactory, comprising the step of re-planning the position of at least one radiating system associated with one base station in said cellular network.

However, Ephremides discloses wherein, if said quality of service is found not to be satisfactory, comprising the step of re-planning the position of at least one radiating system associated with one base station in said cellular network (the cost function calculation, and evaluate the cost function, Col. 5, lines 39-48), and (Figure #1 shows the calculating cost function to optimize coverage, or adding the new base stations/transmitters/receivers, see Col. 7 lines 56 to Col. 8, line 21).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Somaza, with Ephremides' teaching, in order to provide flexible and realistic design for wireless networks in which allows easy changes

to the network components and characteristics for minimizing cost (as suggested by Ephremides, see Col. 1 lines 6-8).

Regarding claim 34, Somaza and Ephremides teach the method of claim 33, Somaza does not explicitly teach wherein said at least one radiating system whose position is re-planned associated with one base station is a radiating system associated with said new base station.

However, Ephremides discloses wherein said at least one radiating system whose position is re-planned associated with one base station is a radiating system associated with said new base station (the cost function calculation, and evaluate the cost function, Col. 5, lines 39-48), and (Figure #1 shows the calculating cost function to optimize coverage, or adding the new base stations/transmitters/receivers, see Col. 7 lines 56 to Col.8 line 21).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Somaza, with Ephremides' teaching, in order to provide flexible and realistic design for wireless networks in which allows easy changes to the network components and characteristics for minimizing cost (as suggested by Ephremides, see Col. 1 lines 6-8).

Regarding claim 35, the combination of Somaza and Ephremides teach the method of claim 25, Somaza further teach comprising the steps of: providing a set of network design parameters (Figure #10 shows the comparison coverage areas);

obtaining from said measurement system a set of measurements corresponding to said set of design parameters (measured at different locations, Col. 8 lines 37-57); and locating at least one critical area wherein the quality of service of said location services fails to reach an expected quality of service level as a result of said set of measurements failing to comply with said set of network design parameters (Fig. 3c shows concerned about cost, quality of service, installation time, and other criteria, Col. 7 lines 19-57).

Regarding claim 36, Somaza and Ephremides teach the method of claim 35, Somaza further teach comprising the steps of: selecting a service scenario (measured at different locations, Col. 8 lines 37-57); and selecting at least one location system as the one most affected by the variations in the network parameters being analyzed (Fig. 3c shows concerned about cost, quality of service, installation time, and other criteria are equate to analyzed, Col. 7 lines 19-57).

Regarding claim 37, Somaza and Ephremides teach the method of claim 35, Somaza further teach comprising the step of providing a list of points in the network characterized by their quality of service (Fig. 3c shows concerned about cost, quality of service, installation time, and other criteria, Col. 7 lines 19-57, and displayed data, map data, Col. 9 lines 28-38).

Regarding claim 38, Somaza and Ephremides teach the method of claim 35, Somaza further teach comprising the steps of generating and displaying a map of critical points in the area under analysis (Col. 4, lines 27-52, and displayed data, map data, Col. 9 lines 28-38).

Regarding claim 39, Somaza and Ephremides teach the method of claim 22, Somaza further teach comprising the step of providing a remote deployment module arranged for operating on a sub-set of the network subject to planning (network management system, Col. 4 lines 35-67, and computer system, and remote locations, Col. 5 lines 19-30).

Regarding claim 40, the combination of Somaza and Ephremides teach the method of claim 39, Somaza does not explicitly teach comprising the steps of configuring said remote deployment module for collecting local network data, pre-validating such measurements and either comparing said measurements with corresponding planning data of a network design sub-set or sending such measurements to a remote module for further processing.

However, Ephremides discloses steps of configuring said remote deployment module for collecting local network data (the cost function calculation module Col. 5 lines 39-49), pre-validating such measurements and either comparing said measurements with corresponding planning data of a network design sub-set or sending such measurements to a remote module for further processing (measures of a

particular network configuration, Col. 4 lines 52-65, or different locations, Col. 5 lines 19-29).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Somaza, with Ephremides' teaching, in order to provide flexible and realistic design for wireless networks in which allows easy changes to the network components and characteristics for minimizing cost (as suggested by Ephremides, see Col. 1 lines 6-8).

Regarding claim 41, the combination of Somaza and Ephremides teach a cellular communication network comprising Somaza does not explicitly teach at least one processing module for implementing the planning method of claim 22.

However, Ephremides discloses at least one processing module for implementing the planning (the cost function calculation module Col. 5 lines 39-49).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Somaza, with Ephremides' teaching, in order to provide flexible and realistic design for wireless networks in which allows easy changes to the network components and characteristics for minimizing cost (as suggested by Ephremides, see Col. 1 lines 6-8).

Regarding claim 42, the combination of Somaza and Ephremides teach a nontransitory computer readable medium encoded with a computer program product loadable into a memory of a computer and including software code portions for

performing the steps of the method of claim 22 (Somaza teaches software tools and a computer system to performing the planning and operation, see Col. 4 lines 7-26).

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Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael T. Vu whose telephone number is (571)272-8131. The examiner can normally be reached on 8:00am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles N. Appiah can be reached on 571-272-7904. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/MICHAEL T VU/
Examiner, Art Unit 2617

/Charles N. Appiah/
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